

(19) World Intellectual Property
Organization
International Bureau



10 DEC 2004



(43) International Publication Date
18 December 2003 (18.12.2003)

PCT

(10) International Publication Number
WO 2003/103893 A3

(51) International Patent Classification⁷: **B24B 41/04**,
F16C 32/06

(21) International Application Number:
PCT/BE2003/000104

(22) International Filing Date: 10 June 2003 (10.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0213166.2 10 June 2002 (10.06.2002) GB

(71) Applicant (for all designated States except US): **K.U. LEUVEN RESEARCH AND DEVELOPMENT** [BE/BE]; Groot Begijnhof, Benedenstraat 59, B-3000 Leuven (BE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **AL-BENDER, Farid** [BE/BE]; Lentedreef 7, B-3000 Leuven (BE). **GRE-GOIR, Christophe** [BE/BE]; Hemelakkers 44, B-1930 Brasschaat (BE).

(74) Common Representative: **K.U. LEUVEN RESEARCH AND DEVELOPMENT**; Groot Begijnhof, Benedenstraat 59, B-3000 Leuven (BE).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

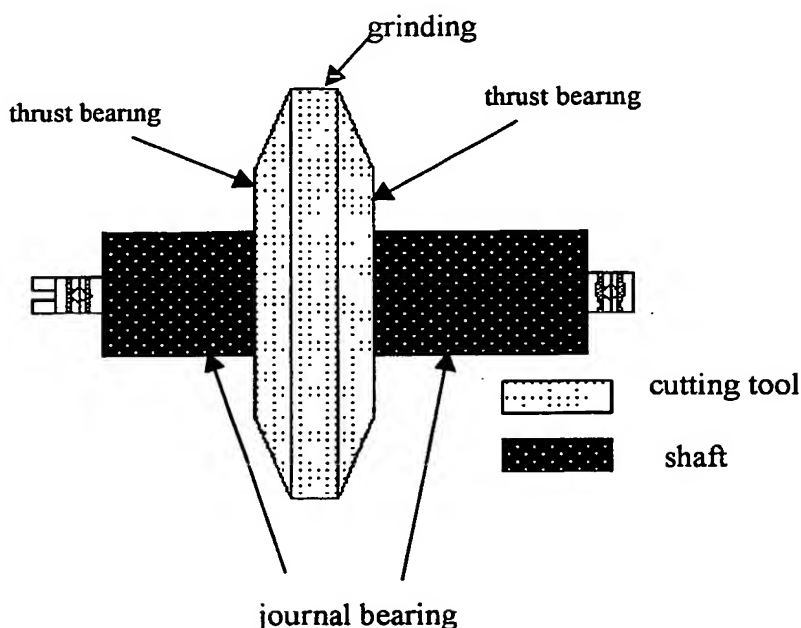
Published:

— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
29 January 2004

[Continued on next page]

(54) Title: A MONOLITHIC ROTATING TOOL



(57) Abstract: A solution is presented for high speed rotating devices, in particular cutting tools, whereby the said rotating device (1) is made monolithic with its shaft and the bearing system, needed to support it during rotation, uses the surfaces of the rotating device (1) as bearing surfaces. In the preferred embodiment, the fluid film bearing system includes two journal bearings (2,4) on both sides of the cutting tool and two thrust bearings (2,3), which use the faces of the cutting tool (1) as bearing surfaces

WO 2003/103893 A3

WO 2003/103893 A3



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/DE 03/00104

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 B24B41/04 F16C32/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 B24B F16C B23D B27B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 795 139 A (SHINTOKU NORIYUKI ET AL) 18 August 1998 (1998-08-18) column 8, line 56 - line 64 column 10, line 9 - column 11, line 15 column 17, line 26-42	1-4, 12, 13, 16-22
Y	figures 1, 5A, 5B	7, 23, 25
Y	DE 35 23 344 A (WEH HERBERT) 8 January 1987 (1987-01-08) column 2, line 12 - line 39 column 4, line 53 - column 6, line 39 figure 3	7, 23, 25
X	US 4 990 064 A (OHTA KAZUHIRO ET AL) 5 February 1991 (1991-02-05) column 5, line 59 - column 6, line 19 column 7, line 34 - line 51 figures 1, 2	24
	--- -/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

S document member of the same patent family

Date of the actual completion of the international search

19 November 2003

Date of mailing of the international search report

02/12/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Schultz, T

INTERNATIONAL SEARCH REPORT

International Application No
PCT/JP 03/00104

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 700 510 A (NAMBA YOSHIHARU ET AL) 20 October 1987 (1987-10-20) the whole document	1,20,21
A	GB 1 451 195 A (NAT RES DEV) 29 September 1976 (1976-09-29) page 2, line 3 -page 3, line 47	25

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/DE 03/00104

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5795139	A	18-08-1998	JP 8254183 A	01-10-1996
			JP 9209928 A	12-08-1997
			CN 1137097 A	04-12-1996
			DE 19610437 A1	10-10-1996
			KR 184555 B1	01-05-1999
DE 3523344	A	08-01-1987	DE 3523344 A1	08-01-1987
			DE 3666115 D1	09-11-1989
			WO 8700360 A1	15-01-1987
			EP 0263110 A1	13-04-1988
			US 5208522 A	04-05-1993
US 4990064	A	05-02-1991	NONE	
US 4700510	A	20-10-1987	JP 1962950 C	25-08-1995
			JP 6092042 B	16-11-1994
			JP 61270043 A	29-11-1986
			FR 2582244 A1	28-11-1986
GB 1451195	A	29-09-1976	NONE	